International J. of Math. Sci. & Engg. Appls. (IJMSEA)
ISSN 0973-9424, Vol. 6 No. V (September, 2012), pp. 215-221

DERIVATIONS ON SIMPLE MUTATION OF NONASSOCIATIVE RINGS

K. JAYALAKSHMI AND K. MADHAVI DEVI

Department of Mathematics,
J. N. T. U. A College of Engg., Anantapur, India

Abstract

In [2] the author discusses derivation of $R(p, q)$ when $R(p, q)$ is prime and $p, q \in R$ satisfies the condition $R = R_p + R_q + A$ where A is a subspace of $Z(R)$. Here in this paper, we generalize theorem 1 of [2] for the simple nonassociative ring $R(p, q)$. Let R be a nonassociative ring and p and q two fixed elements of R. We introduced the new multiplication $x \circ y = (xp)y - (yq)x$ in R and we leave the addition in R uncharged. If p and q are in the center $Z(R)$, then $x \circ y$ is described by

$$x \circ y = xpy - yqx \tag{1}$$

The new structure is denoted by $R(p, q)$ for a fixed element $a \in R$ denote by $R(a)$ the ring with multiplication $x \cdot y = xay$. We define $R(p, q)$ as the (p, q) mutation (ring) of R. If $q = 0$, one usually writes $R(p)$ instead of $R(p, q)$. In this case $R(p)$ is called a p-homotope of R. By a derivation of R we mean a linear map $d : R \to R$ satisfying $d(xy) = d(x)y + xd(y)$, and denote by Der R the set of derivations of R. A ring is said to be simple if whenever A is an ideal of R then either $A = R$ or $A = 0$.

Key Words and Phrases : (p, q)*-mutation, Derivation, Simple ring.*

2010 AMS Subject Classification : 17A36.